render the graft material radioactive. The jars are then stored at room temperature. The shelf life is at least two years. The irradiation not only sterilizes the cartilage but also appears to render it immunologically inert. This is evidenced by the minimal absorption that occurs after implantation and the infrequency of local immunologic response. Moreover, preliminary work indicates that host chondrocytes may eventually invade the implanted tissue.

Irradiated cartilage has many uses. Over the past eight years we have used it for chin augmentation, repair of saddle-nose deformity, malar augmentation in Treacher-Collins syndrome, cranioplasty in frontal skull defects and an onlay graft in hemimandibular atrophy. It can be carved with ease and maintains its shape well. It is readily available and obviates the need for taking a hip or rib graft, with the attendant risks of unpredictable graft absorption and potential complications. Research by the author is being directed at clarifying the biological activity of irradiated cartilage.

PAUL J. DONALD, MD, FRCS(C)

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Argon Laser Treatment of Port-Wine Stains

THE WORD LASER is an acronym derived from the first letters of the words "light amplification by stimulated emission of radiation." The argon laser produces a blue-green beam of light which is selectively absorbed by red pigment. This characteristic of argon laser light has been successfully applied in the treatment of vascular anomalies of the skin, particularly port-wine stains. The early results of Apfelberg, Maser and Lash have been duplicated by several authors.

Unlike carbon dioxide lasers, argon lasers spare epithelial tissue and photocoagulate subepithelial vascular tissue with little or no scarring. Following treatment of an initial test patch, which is successful 75 percent of the time, the area of port-wine stain is treated with a 1 to 2 mm argon laser beam until the entire area of the defect is covered. Improvement in the appearance of the malformation can be expected in 60 percent to 70 percent of cases.

Laser treatment of telangectasias and hemangiomas can be done on an outpatient basis, with local or general anesthesia. Although the results in adults are satisfying, its effectiveness in children has yet to be determined. With further refinement of technique and careful patient selection, argon laser treatment will be a welcome addition to the management of patients with this deforming condition.

ARLEN D. MEYERS, MD

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Use of Pedicle Flaps in the Surgical Treatment of Alopecia

THE NEWEST PROCEDURE of surgeons doing hair replacement procedures is the Juri flap operation. In 1975 Dr. Jose Juri of Buenos Aires described his six-year experience with temporo-parieto-occipital pedicle flaps for the treatment of alopecia. The design and number of flaps depends on the location and the degree of baldness.

Each twice-delayed, 4-cm flap is pedicled on the superficial temporal artery, and is long enough to reach the fringe on the opposite side of the area of alopecia. The delays are done while the patient is under local anesthesia; however, the final transposition is carried out under general anesthesia. "Dog-ear" formation may occur at the base of the flap where it is rotated upon itself at the hairline. This can be hidden with proper hairstyling until it is revised four to six weeks later.

The main advantage of the flap is that coverage is immediate and continuous. Because the hair is never totally separated from its blood supply, there is no temporary loss of hair as occurs with hair transplantation. It is a more involved procedure, but larger amounts of hair with much greater density are transferred with this operation (the equivalent of about 350 punch grafts). In most patients, *total coverage* with normal hair density can be obtained by stretching the flaps and carrying out scalp reductions.

Another approach is the use of shorter non-

delayed flaps, 2.5 to 3.0 cm wide, taken from both sides of the scalp (each crossing half of the area of alopecia). This procedure was first described by Passot in 1919 and, more recently, by Elliott in 1977. The operation is not as extensive, and the donor areas on both sides of the scalp are used to cover an area equivalent to less than one Juri flap. This technique should be used only in patients with minimal frontal loss of hair who do not face the possibility of extensive alopecia.

RICHARD W. FLEMING, MD
TOBY G. MAYER, MD

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Skin Flaps and Vasodilators

SKIN FLAP VIABILITY is crucial to almost all surgeons. It is particularly important in plastic and reconstructive surgical procedures when local skin flaps are advanced, rotated or transposed. Flap necrosis can be a disaster, and is often related to an inadequate blood supply. Many tests have been devised to predict skin flap viability, the most valuable of which is administration of the dye fluorescein. After the flap is raised, 1 gram of fluorescein is given as an intravenous push. Some 20 to 30 minutes later the flap is examined with a Wood's light. If the flap shows evidence of the dye, the blood supply is adequate. However, if it is totally black, the flap is not receiving blood and will not survive. Many surgeons using large flaps, including myocutaneous flaps, carry out this test routinely.

Survival of local skin flaps can be enhanced. Flap delay has long been used, and is still felt to be useful for many large transposition flaps such as the forehead flap. Flap viability is determined by the local blood supply; hence, a variety of vasodilators have been tested, with significant results. Circulation in skin and skeletal muscles is controlled by smooth muscle sphincters. This is regulated by intrinsic and extrinsic factors and can be affected by both humoral and neural systems. Isoxsuprine (Vasodilan) is a beta-adrenergic stimulator which, in a variety of studies in animals, has been found to affect precapillary sphincters. Isoxsuprine has significantly improved flap circulation and survival, and in both animals and humans, is probably better than any other form of local vasodilation. In both experimental and clinical flaps with areas not expected to survive, based on results of fluorescein testing, significant increases in length of survival occurred following the use of isoxsuprine. This drug has been useful both in skin flaps and for myocutaneous flaps.

Finseth reported three cases in which distal portions of local skin flaps looked poor and showed no fluorescence following fluorescein testing. It was expected that the flaps would slough. However, isoxsuprine was given, and in all three cases, flap viability improved and no serious damage occurred.

If either flap viability or fluorescein angiography is in question, isoxsuprine should be administered immediately. In the operating room, 10 mg may be given parenterally, followed by the same dose administered every six hours. As soon as the patient can receive nourishment orally, 20 mg of isoxsuprine should be given every six hours for approximately ten days.

It is our policy at both the University Hospital and Veterans Administration Medical Center in San Diego to carry out fluorescein angiography in all cases of large skin flaps. If there is any question of viability, patients are begun immediately on this vasodilator regimen.

TERENCE M. DAVIDSON, MD

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Obstructive Sleep Apnea

OBSTRUCTIVE SLEEP APNEA (OSA) is defined as a complete cessation of nasal and oral air flow during sleep for greater than ten seconds, accompanied by persistent chest wall and abdominal movement. For almost a decade, OSA has been studied in children with pulmonary hypertension and congestive heart failure secondary to adenotonsillar hypertrophy, macroglossia or micrognathia. The more subtle clinical manifestations of the OSA syndrome are now recognized and include hypersomnolence, weight loss, behavioral disturbances and enuresis.

Previously, those children who may have bene-